



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,143	03/16/2004	Toshihisa Takeyama	KON-1860	3282
20311	7590	12/11/2006		
LUCAS & MERCANTI, LLP 475 PARK AVENUE SOUTH 15TH FLOOR NEW YORK, NY 10016			EXAMINER ANGEBRANNDT, MARTIN J	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/802,143	<b>Applicant(s)</b> TAKEYAMA, TOSHIHISA	
	<b>Examiner</b> Martin J. Angebranndt	<b>Art Unit</b> 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 3/16/04, 6/8/05 & 12/7/05.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1756

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims should make it clear that the binder is not reactive with the polymerizable compound and forms an insitu matrix.

- 3.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-4,6,8-9,14 and 20 are rejected under 35 U.S.C. 102(b) as being fully anticipated by and Ohkuma et al. 210.

Ohkuma et al. 210 teaches the composition of example 2 coated on a glass slide to a thickness of 10 microns and overcoated with a 3.5 micron PET film. The composition includes a cationic polymerizable systems and a free radically polymerizable system where the

Art Unit: 1756

radical polymerization initiator is methylene blue (a thiazine dye) with a triphenyl-t-butylboatre anion. ((12/30-13/17;14/20-15/7).

The applicant is claiming the medium prior to the curing of the binder matrix and claim 20 does not describe the reactive monomer being cured prior to the interferometric exposure

The thickness limitation of 200 microns or more in the independent claims or the recitation of the medium with the cured matrix could be used to obviate this rejection.

7. Claims 1-4,6-9,14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Dhar et al. '551.

Korishima et al. JP 05-046061 teaches compositions for forming volume holograms where a dye cation [0007] and a borate anion [0008-0010] are combined with a free radical polymerizable systems using ethylene based compounds such as acrylic or acrylate monomers [0012]. Examples 1 uses a cyanine dyes with a triphenyl-butylborate anion combined with N,N-dimethylaniline, polyvinylbutyral, vinylcarbazole and 2-phenoxyethy acrylate coated on a glass plate. These were exposed using and 830 nm laser forming interference fringes and then finally cured using a halogen lamp thereby forming a reflection hologram. [0019-0022].

Dhar et al. '551 teach in example 1, an acrylate monomer and CGI-784 as the photoinitiator mixed with matrix precursors dibutyltin dilaurate, diisocyanate terminated polypropylene glycol and dihydroxypolypropylene glycol, which are heated (13/65-15). Examples 3 and 4 are similar, place the composition between two glass slides with a spacer and after curing of the matrix are used to record holograms. The ability to form thick recording layers of more than 200 microns is disclosed. (3/13-19,4/3-12). Useful photoactive monomers including acrylates are disclosed as useful in this system. (6/51-67). A reduction is shrinkages of

Art Unit: 1756

the hologram is also realized (7/1-48). The use of various reactions including hydrosilation and the like to form the matrix is disclosed. (6/26-50)

It would have been obvious to one skilled in the art to modify Korishima et al. JP 05-046061 by using an insitu formed matrix and the composition between two glass slides in lieu of the polyvinyl butyral binder to allow for a thicker recording medium to be formed and reduce shrinkage as taught by Dhar et al. '551.

The outer shape of the resultant medium is considered an obvious aesthetic/design choice and there is no evidence on the record that the shape confers and particular benefits.

8. Claims 1-4,6-14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Hegel et al. '008.

Hegel et al. '008 teach in example 1, an acrylate monomer and IRG-784 as the photoinitiator mixed with matrix precursors dibutyltin diacetate, diisocyanate terminated polypropylene glycol and dihydroxypolypropylene glycol, which are placed between two glass slides with a 500 micron spacer and after curing of the matrix [0031-0040]. The formation of holograms using these is disclosed. [0052-0056]. Useful photoactive monomers including acrylates are disclosed as useful in this system. [0029]. A reduction in shrinkages of the hologram is also realized. The provision of antireflection coatings on one or both of the substrates is disclosed. [0016,0018]. The substrates may be 0.5-1.3 mm thick [0019].

It would have been obvious to one skilled in the art to modify Korishima et al. JP 05-046061 by using an insitu formed matrix and the composition between two glass slides in lieu of the polyvinyl butyral binder to allow for a thicker recording medium to be formed and reduce shrinkage as taught by Hegel et al. '008.

Art Unit: 1756

The outer shape of the resultant medium is considered an obvious aesthetic/design choice and there is no evidence on the record that the shape confers and particular benefits.

9. Claims 1-12,14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Sasa et al. WO 2004/017141 (Sasa et al. '773 is US equivalent).

Sasa et al. WO 2004/017141 teach in example 6, an epoxy monomer and IRG-784 as the photoinitiator mixed with matrix precursors polymethylphenylsiloxane, which are placed between two 0.8 mm glass slides with a 500 micron spacer and after curing of the matrix (29/10-18, 33/20-34/11); [0114,0125-0126]. The formation of holograms using these is disclosed. (36/10-38/10 );[0134-0139]. Useful photoactive monomers including acrylates are disclosed as useful in this system. (20/10-21/22);[0085-0087]. A reduction in shrinkage of the hologram is also realized.

It would have been obvious to one skilled in the art to modify Korishima et al. JP 05-046061 by using an insitu formed matrix of polymethylphenylsiloxane and the composition between two glass slides in lieu of the polyvinyl butyral binder to allow for a thicker recording medium to be formed and reduce shrinkage as taught by Sasa et al. WO 2004/017141.

The outer shape of the resultant medium is considered an obvious aesthetic/design choice and there is no evidence on the record that the shape confers and particular benefits.

10. Claims 1-12,14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Dhar et al. '104.

Dhar et al. '104 teach in example 1, an acrylate monomer and CGI-784 as the photoinitiator mixed with matrix precursors dibutyltin dilaurate, diisocyanate terminated

Art Unit: 1756

polypropylene glycol and dihydroxypolypropylene glycol [0091-0092], placed between two 750 micron PMMA disc with a spacer 750 microns and cured of the matrix 0096-0101]. The ability to form thick holographic recording layers of more than 200 microns is disclosed. [0072].

Useful photoactive monomers including acrylates are disclosed as useful in this system. [0030].

A reduction in shrinkage of the hologram is also realized. The use of various reactions including hydrosilation and the like to form the matrix is disclosed and the matrix can include polyols which are fluorinated. [0027].

It would have been obvious to one skilled in the art to modify Korishima et al. JP 05-046061 by using an insitu formed matrix such as those exemplified or fluorinated versions thereof and coat the composition between two glass slides in lieu of the polyvinyl butyral binder to allow for a thicker recording medium to be formed and reduce shrinkage as taught by Dhar et al. '104.

The outer shape of the resultant medium is considered an obvious aesthetic/design choice and there is no evidence on the record that the shape confers any particular benefits.

11. Claims 1-4, 6-9, 14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Dhar et al. '551 combined with Gottschalk et al. '541 or Adair et al. '414.

Gottschalk et al. '541 teaches the use of dye borate complexes to cure free radical polymerizable systems, The dyes may be methine, polymethine, triarylmethine, indoline, thiazine, xanthene, oxazine, acridine, cyanine, carboncyanine, hemicyanine, rhodamine and azomethine dyes (5/25-6/54)

Art Unit: 1756

Adair et al. '414 teaches the use of cationic transition metal complexes with borate anions to cure free radical polymerizable systems, where the ligands on the complexes can be pyridine, bipyridines, phenanthrolines (the latter have two chelation sites) and the like (4/37-6/49)

In addition to the basis provided above, it would have been obvious to one skilled in the art to modify the embodiments rendered obvious by the combination of Korishima et al. JP 05-046061 and Dhar et al. '551 as set forth above by using other dye borate photoinitiators known in the art such as those taught by Gottschalk et al. '541 or Adair et al. '414 with a reasonable expectation of success based upon the use of these to initiate free radical polymerization.

12. Claims 1-12,14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of either Sasa et al. WO 2004/017141 (Sasa et al. '773 is US equivalent) or Dhar et al. '104, combined with Gottschalk et al. '541 or Adair et al. '414.

In addition to the basis provided above, it would have been obvious to one skilled in the art to modify the embodiments rendered obvious by the combination of Korishima et al. JP 05-046061 and either of Sasa et al. WO 2004/017141 or Dhar et al. '104 as set forth above by using other dye borate photoinitiators known in the art such as those taught by Gottschalk et al. '541 or Adair et al. '414 with a reasonable expectation of success based upon the use of these to initiate free radical polymerization.

13. Claims 1-4,6-14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Hegel et al. '008, combined with Gottschalk et al. '541 or Adair et al. '414.

In addition to the basis provided above, it would have been obvious to one skilled in the art to modify the embodiments rendered obvious by the combination of Korishima et al. JP 05-



Art Unit: 1756

046061 and Hegel et al. '008 as set forth above by using other dye borate photoinitiators known in the art such as those taught by Gottschalk et al. '541 or Adair et al. '414 with a reasonable expectation of success based upon the use of these to initiate free radical polymerization.

14. Claims 1-12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of either Sasa et al. WO 2004/017141 (Sasa et al. '773 is US equivalent) or Dhar et al. '104, combined with (Gottschalk et al. '541 or Adair et al. '414) and Horimai et al., WO 02/15176.

Horimai et al., WO 02/15176 (Hormai et al. '891 is US equivalent) teaches with respect to figure 1, a holographic recording medium which comprises a substrate (2), a holographic recording layer (photopolymers) (3), a second substrate (4) and a reflective layer (5). The reflective layer and the recording layer can be next to each other (12/5-23; 11/40-64). The interference fringes results from the interferences from the light passing through the layer toward the reflective layer and that reflected back into the laser from the reflective layer. (col 5. ?; 4/53-5/7).

In addition to the basis provided above, it would have been obvious to one skilled in the art to modify the embodiments rendered obvious by the combination of Korishima et al. JP 05-046061 with either of Sasa et al. WO 2004/017141 or Dhar et al. '104 and either of Claims 1-4,6-14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Hegel et al. '008, combined with Gottschalk et al. '541 or Adair et al. '414 as set forth above by adding a reflective layer on the further substrate as taught Horimai et al., WO 02/15176 to allow holographic recording without a second beam.

Art Unit: 1756

15. Claims 1-4 and 6-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Hegel et al. '008, combined with 9Gottschalk et al. '541 or Adair et al. '414) and Horimai et al., WO 02/15176

In addition to the basis provided above, it would have been obvious to one skilled in the art to modify the embodiments rendered obvious by the combination of Korishima et al. JP 05-046061 with Hegel et al. '008 and either of Claims 1-4, 6-14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korishima et al. JP 05-046061, in view of Hegel et al. '008, combined with Gottschalk et al. '541 or Adair et al. '414 as set forth above by adding a reflective layer on the further substrate as taught Horimai et al., WO 02/15176 to allow holographic recording without a second beam.

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1756

17. Claims 1-4, and 8-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-16 of copending Application No. 11/201,815 (US 2006/0040185), in view of Korishima et al. JP 05-046061.

It would have been obvious to one skilled in the art modify the claims of copending Application No. 11/201,815 (US 2006/0040185), by using photopolymerizable compounds and initiators known to be useful form for forming holographic pattern such as those disclosed by Korishima et al. JP 05-046061 with a reasonable expectation of forming a useful holographic recording medium.

This is a provisional obviousness-type double patenting rejection.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Koike et al. '581 and Cunningham teach dye borate photoinitiators.

Dhar et al. '536, Rotto '690 and Settachayanon et al. '691 teach holographic recording systems with insitu formed binders.

Martin et al. '970 (6/10) teaches the use of dye borate is holographic recording.

Takeyama et al. '911 and Takeyama et al. '010 are copending applications.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1756

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Martin J. Angebrannt  
Primary Examiner  
Art Unit 1756

12/8/2006